

REMARKS

Claims 1-15 remain pending in the present application. No claims have been amended. Applicants respectfully request further examination and allowance of the application.

Rejections Under 35 U.S.C. § 103 –Claims 1-3, 5-8 and 10-15

Claims 1-3, 5-8 and 10-15 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over European Patent No. 0 929 028 to Kramer (hereinafter *Kramer*) in view of European Patent No. EP 1 396 812 to Miyasaka et al. (hereinafter *Miyasaka*). Applicants respectfully traverse this rejection for at least the following reasons, including that these claims recite features that are not disclosed or suggested in either *Kramer* or *Miyasaka*.

Kramer discloses a method and system for providing user input by detecting a change in fingerprint pattern of a user. According to *Kramer*, the “device 19 includes a horizontal scanning stage 31 and a vertical scanning stage 33. Scanning stages 31 and 33 enable one cell 29 at the time according to a predetermined scanning pattern. In the preferred embodiment, each cell 29 is scanned once each millisecond to produce a frame rate of 1,000 frames per second.” (*Kramer*, paragraph 0022.) *Kramer* continues stating “[a]n A/D converter 37 is connected to receive the output of each cell 29 of array 27.” See *Kramer*, paragraph 0024. From this it is clear that *Kramer* requires that *every* cell 29 in the array 27 be scanned for each frame. The Examiner appears to acknowledge that *Kramer discloses scanning every cell and does not disclose scanning only certain selected subsets or zones of the full array of cells*, stating:

Kramer does not teach wherein the sampling resolution of the sensing surface is based on at least one of periodically sampling alternating pixels in an array and monitoring at least one of a plurality of zones in an array, wherein the plurality of zones are evenly or unevenly distributed throughout the array, and where the plurality of zones populate the array with varying density, and wherein the sampling resolution is user selectable based on a size of a feature of a fingerprint.

However, the Examiner cites *Miyasaka* as disclosing such features and alleges that it would have been obvious to have combined such alleged teachings of *Miyasaka* with the teachings of *Kramer* in a manner that arrives at the invention as claimed. Applicants respectfully disagree with the Examiner’s characterization of what *Miyasaka* discloses. Applicants specifically address below each of the paragraphs of *Miyasaka* that the Examiner

cites as allegedly disclosing a feature recited in these claims.

Specifically, the Examiner cites paragraph 0073 of *Miyasaka* as disclosing “wherein the sampling resolution of the sensing surface is based on at least one of periodically sampling alternating pixels in an array” Paragraph 0073 states in its entirety:

[0073] The fingerprint image capture section 20 captures a fingerprint image of an operator (user) of the information device 10. The fingerprint image capture section 20 is capable of capturing the fingerprint images at least twice. The fingerprint image capture section 20 may be formed to repeatedly capture the fingerprint images at a given frequency, 25 for example. As the fingerprint image capture section 20, a fingerprint sensor which detects a fingerprint by using various methods may be used. The fingerprint sensor is preferably small taking into consideration that the information device 10 is applied to the portable information equipment.

Applicants submit that paragraph 0073 describes little more than capturing a fingerprint image multiple times. Applicants further submit that paragraph 0073 says nothing about how many pixels out of the full array of pixels or which pixels out of the full array of pixels are sampled to capture the image. Therefore, it is only reasonable to believe that paragraph 0073 refers to capturing a fingerprint image by sampling *all* of the pixels in the sensor array, as nothing in this paragraph even remotely refers to sampling fewer than all pixels or to a sampling *resolution*, i.e., sampling using a selected number or arrangement of pixels. Nothing in this paragraph suggests that the sampling resolution is based upon anything but *all* of the pixels of the sensor array.

More specifically, with reference to the language of independent claims 1, 6 and 10, from which the remaining claims in this rejection depend, nothing in paragraph 0073 suggests that the sampling resolution of the sensing array is based on “periodically sampling alternating pixels in an array.” It is well understood that the term “alternating” refers to skipping one or more pixels (e.g., only the odd pixels, only the even pixels, etc.). Rather, paragraph 0073 refers to capturing a fingerprint image “at least twice” (implicitly using every available pixel each time). Sampling two or more times has nothing to do with sampling *alternating pixels*. Rather, paragraph 0073 clearly suggests that, no matter how many times a fingerprint image may be captured, each time one is captured, *all* of the pixels are sampled.

The Examiner further cites Figs. 2a-2b of *Miyasaka* as disclosing “monitoring at least one of a plurality of zones in the array.” Applicants respectfully disagree and submit that Figs. 2a-b show “minutiae points of a fingerprint,” which are characteristics of a *fingerprint*,

not characteristics of how the *sensing array* pixels are sampled or monitored to capture the fingerprint. Applicants respectfully direct the Examiner's attention to Figs. 3A-3D of Applicants' drawings, which illustrate sampling using pixels that are grouped into zones. Nothing in Figs. 2a-b of *Miyasaka* similarly reflects *zones of pixels*. Rather, Figs. 2a-b depict points on a fingerprint. If the Examiner continues to take the position that Figs. 2a-b depict zones of pixels, Applicants respectfully request that the Examiner point out exactly what element in Figs. 2a-b the Examiner contends represents a sampled group or zone of pixels in a sensor array.

Furthermore, the Examiner cites Figs. 2a-b and paragraphs 0079-0082 and 0092-0095 as disclosing that the plurality of zones can be *evenly* distributed throughout the array or, alternatively in other instances, *unevenly* distributed throughout the array. As discussed above, Figs. 2a-b do not in any way even relate to zones of pixels. Thus, they cannot relate to how such zones can be distributed in the sensor array. Paragraphs 0079-0082 state:

[0079] FIG. 2A shows ridge bifurcations of a fingerprint; and FIG. 2B shows ridge endings of a fingerprint. Ridge bifurcations of a fingerprint are extracted by the minutiae point extraction section 60 from a fingerprint image captured by the fingerprint image capture section 20, for example. In FIGS. 2A and 2B, the fingerprint image shows the ridges (projecting sections) of a fingerprint. A ridge bifurcation is a portion at which a ridge divides into two or more branches. A ridge ending is a portion at which a ridge ends.

[0080] Since a fingerprint is unique, distribution of ridge bifurcations or ridge endings differs between individuals. Therefore, if ridge bifurcations or ridge endings can be determined, it suffices to merely compare the distribution of ridge bifurcations or ridge endings. This reduces the amount of information to be compared, whereby the load of comparison processing can be reduced.

[0081] In FIG. 1, the comparative section 30 compares the distribution of minutiae points including ridge bifurcations and ridge endings of the first and second fingerprint images, and calculates the moving distance, moving direction, moving velocity, and rotational angle from the positional deviation of the corresponding minutiae points. The image generation section 40 generates an image by scrolling an image to be displayed or moving a pointer corresponding to the moving distance, moving direction, moving velocity, and rotational angle calculated by the comparison section 30. The display section 50 displays the image generated by the image generation section 40 corresponding to the comparison results of the comparison section 30.

[0082] FIGS. 3A and 3B show examples of display control.

Applicants submit that the above-quoted paragraphs 0079-0082 of *Miyasaka* describe, as discussed above, little more than identifying features of fingerprints, such as ridge

bifurcations and ridge endings, using minutiae points obtained from capturing an image of the fingerprint. Nothing in these paragraphs relates to zones of pixels, let alone to a distribution pattern (an even pattern, uneven pattern, etc.) in which such zones are distributed over the full array of sensor pixels in sampling them. Paragraphs 0092-0095 similarly do not relate in any way to distributions of zones of pixels in sampling a sensor array:

[0092] FIGS. 5 and 6 show an example of an operation flow of the information device 100.

[0093] A fingerprint is detected by the fingerprint image capture section 20 (step S150), whereby a fingerprint image is captured. As a result, a fingerprint image for check (first fingerprint image) is generated (step S151). The fingerprint image for check is used in the check section 110.

[0094] The check section 110 compares the minutiae point of the fingerprint image for check extracted by the minutiae point extraction section 140 with the minutiae point of the fingerprint image registered in the registration information 120 to verify the fingerprint images (steps S152 and S153).

[0095] If it is determined that the fingerprint image for check is not identical with the registration information 120 (step S153: N), use inhibition processing is performed (step S154), and processing is terminated (END). As the use inhibition processing, indication to the effect that the fingerprint image cannot be verified may be displayed in the display section 50, or the information device may be caused to transition to a power off state, for example.

It can be seen that paragraph 0093 merely states that a fingerprint image is captured, and paragraph 0094 states that the minutiae points are extracted. Paragraph 0094 relates to comparing the fingerprint minutiae points with those previously registered. Paragraph 0095 relates to registration between two captured fingerprints and “use inhibition processing.” None of this has anything to do with using a plurality of pixel zones in sampling a sensor array or how such zones can be distributed, in some cases evenly, and in other cases unevenly, over the full array of sensor pixels.

A *prima facie* case of obviousness cannot be established absent the combined references teaching or suggesting *all* the claim limitations. (MPEP § 2143.) As *Miyasaka* does not teach or suggest at least the above-discussed features of the invention as set forth in claims 1, 6 and 10, from which the remaining claims in this rejection depend, the combined teachings of *Miyasaka* and *Kramer* cannot result in the invention as set forth in the claims. For at least this reason, the invention as set forth in claims 1-3, 5-8 and 10-15 would not have

been obvious to a person of ordinary skill in the art, and it is respectfully requested that the rejection be reconsidered and withdrawn.

Rejections Under 35 U.S.C. § 103 – Claims 4 and 9

Claims 4 and 9 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kramer* in view of *Miyasaka* and further in view of U.S. Patent No. 5,841,078 to Miller *et al.* (hereinafter *Miller*). Applicants respectfully traverse this rejection for at least the same reasons discussed above with regard to the claims from which claims 4 and 9 depend. Regardless of whether *Miller* does or does not teach the features recited in claims 4 and 9, *Miller* does not teach the features discussed above with regard to the claims from which claims 4 and 9 depend. As none of these references teach or suggest at least the above-discussed features of the invention, the combined teachings of *Miyasaka*, *Kramer* and *Miller* cannot result in the invention as set forth in the claims 4 and 9.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration of the rejections and allowance of the application. Should the Examiner have any comments regarding the Applicants' response or believe that a teleconference would expedite prosecution of the pending claims, Applicants request that the Examiner telephone Applicants' undersigned attorney.

Respectfully submitted,

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